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The Role of Body Image in Psychosomatic Symptom Choice

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I. HYPOTHESIS AND PURPOSE

THIS study was designed to explore the question of whether an individual's unconscious concept of his own body may be one factor in determining which areas of his body will become involved when body malfunctioning develops as a defense against disturbing psychological problems. It has been a persistently stimulating task for those interested in psychosomatic phenomena to seek out relationships between malfunctioning in given organs or organ systems and patterns of psychodynamics. For example, Alexander (3, 4) has suggested that the development of stomach ulcers is correlated with a particular pattern of unconscious passivity. Others have suggested the correlation of given patterns of psychodynamics with spastic colitis (3), neurodermatitis (3, 7), asthma (3, 7), and hypertension (3, 7). A number of the suggested correlations between site of body disturbance and personality patterns have been sup-

ported by clinical studies (3, 7). But the confirmation value of such studies has tended to be of a rather general and approximate character. Furthermore, there has been considerable overlap among the various patterns of psychodynamics that have been put forward as being specific to symptomatology in given organs. Similar-sounding formulations have been suggested as being specifically explanatory for disturbances in different organ systems.

Streitfeld (23) and others (25, 11, 18) who have investigated the specificity of the psychodynamic formulations for certain psychosomatic symptoms have been impressed by how unspecific and how low in predictive value such formulations are.

The writers undertook the present study with the intention of adding a new dimension to the concept of psychosomatic symptom choice. It was felt that a higher degree of specificity might be obtained in accounting for psychosomatic symptom choice if some new frame of reference were taken relative to the problem. A very obvious fact about psychosomatic symptomatology is that it always involves breakdown in some area of body functioning. Body malfunctioning becomes a means of expression or defense. It therefore seemed logical to the writers that an individual's attitudes toward his body should play a significant part in this process of body malfunctioning. If one knew how the individual felt

¹We wish to express our appreciation to the members of the Psychology Department at the Houston VA Hospital who assisted our work at each stage by constructive criticism, and who gave freely of their time in carrying out a number of laborious rating procedures. Special thanks are due Dr. Robert B. Morton, Dr. Robert Westphal, and Dr. Charles L. Spurr at the Houston VAH who aided us in obtaining subjects. We are also indebted to Dr. Ruth Levy and Dr. Sheldon E. Waxenberg for permission to use certain Rorschach data which they had collected.

about his body, what body parts the individual overvalued and undervalued, or what kind of a "map" the individual had of his body, would this not throw light on the problem of psychosomatic symptom choice? Is it not possible that the life experiences which the individual has with his body gradually build up a body schema which influences how the body will be used to express conflicts and disturbances? The importance of the individual's feelings about his body has been recognized by a number of observers. Schilder (19), Reich (17), Adler (1), and others (10, 13) have been much concerned with this problem. Schilder (19) has probably been the most systematic and detailed in his concern, and has mustered many examples from his clinical experiences of how "body image" affects behavior and symptomatology. The term "body image" will be used throughout the present paper. It will refer to the total pattern of feelings that the individual has about his own body.

In an initial exploratory attempt to determine possible relationships of body image to psychosomatic body disturbance, the present writers studied, by means of interview, Rorschach, TAT, and Figure Drawing, body image phenomena in a group of male rheumatoid arthritics. The details of the study have already been published elsewhere (6). One of the major findings was that the arthritics unconsciously conceive of their body as a container whose walls are formed out of a hard protective substance. It appeared that the arthritics fantasized their outer body wall as being a tough defensive barrier designed to ward off threat from the outside and to hold disturbing, hostile impulses within. Such an emphasis on the protective value of the outer part of the body was considered striking in view of the fact

that the arthritic symptomatology involves a stiffening of the musculature in the outer layers of the body. This suggested the possibility that there might be a correlation between certain aspects of the body image and the occurrence of psychosomatic symptoms in the outer layers of the body vs. the interior of the body. A formal hypothesis was developed to the effect that those persons whose psychosomatic symptoms involved the body exterior would conceive of their bodies as surrounded by a protective, defensive wall, whereas those with symptoms involving the body interior would conceive of their bodies as lacking a defensive wall and being easily penetrated. It was further hypothesized that such differences in body image between those with interior symptoms and those with exterior symptoms would not be merely a reaction to having lived with interior vs. exterior symptoms, but that the body image differences themselves played some etiological role in the choice of an internal symptom site. These are the hypotheses which were examined. The first of these hypotheses will be referred to as Hypothesis I and the second as Hypothesis II.

Over all, these hypotheses imply that one of the important dimensions of an individual's body image is the way in which he fantasies his body interior to be differentiated from his body exterior. These hypotheses further suggest that this mode of body image differentiation is correlated etiologically with the appearance of psychosomatic symptoms in given types of body sites.

II. SUBJECTS AND METHODS INVOLVED IN TESTING HYPOTHESIS I

Subjects

In order to test the hypothesis that individuals with outer vs. interior psy-

TABLE 1

THE NUMBER, DIAGNOSTIC GROUPING, SEX, MEAN AGE, MEAN EDUCATION IN YEARS, AND MEDIAN DURATION OF SYMPTOMS IN YEARS OF SUBJECTS WITH SYMPTOMS INVOLVING THE BODY INTERIOR AND THOSE SUBJECTS WITH SYMPTOMS INVOLVING THE BODY EXTERIOR

| Interior Symptom Group | | | | | | Exterior Symptom Group | | | | | |
|------------------------|----|----------|-----------|----------------|-----------------------------|------------------------|----|----------|-------------------|----------------|-----------------------------|
| Diagnostic Category | N | Mean Age | Sex | Mean Education | Median Duration of Symptoms | Diagnostic Category | N | Mean Age | Sex | Mean Education | Median Duration of Symptoms |
| Stomach Disturbance | 25 | 31.7 | All Men | 11.6 | 2.0 | Rheumatoid Arthritis | 25 | 31.8 | All Men | 11.0 | 5.5 |
| Spastic Colitis | 20 | 33.5 | All Women | 11.4 | 10.0 | Neurodermatitis | 25 | 34.0 | All Men | 10.4 | 9.5 |
| | | | | | | Conversion Hysteria | 20 | 30.0 | 14 Men 6 Women | 10.0 | 3.5 |

chosomatic symptoms differ in the emphasis they place upon the defensive value of the body exterior in their body image, it was necessary to compare body image data from various symptom groups.

Table 1 indicates the groups that were utilized in this comparison.

The interior group consisted of two diagnostic subgroups, a subgroup of patients with stomach difficulties and a subgroup of patients with spastic colitis. Clearly the patients in both of these subgroups had symptoms which focus in the body interior. The group with stomach difficulties was obtained at the Houston VA Hospital. It consisted of 18 patients with actual stomach ulcers and seven patients with such symptoms as chronic stomach pains and vomiting. The spastic colitis group consisted of 20 women who were patients at Mt. Sinai Hospital in New York and who were tested by Dr. Sheldon Waxenberg (25).

A more detailed explanation is required for the three diagnostic subgroups included in the body exterior category. The term "body exterior" is used here in a broad sense to include all the tissue (viz., skin and musculature) which constitutes the sheath of the body and its appendages. Thus, one of the subgroups consisted of 25 rheumatoid arthritics. These individuals all had symptoms which involved a stiffening and limitation in movement of various parts of the musculature. They were all veterans who were patients at the Houston VA Hospital. A second group consisted of 25 patients with neurodermatitis. This group contained subjects who had a variety of symptoms involving irritation or inflammation of the skin. These symptoms could not be ascribed to a specific external

etiological factor (e.g., chemical irritant or particular infectious agent), and were diagnosed as "neurodermatitis" because they were considered to be psychosomatic in origin. All the subjects in the neurodermatitis group were veterans seen at the Houston VA Hospital.

The third subgroup in the exterior symptom category consisted of 20 conversion hysterics with symptoms that involved either paralysis or tic-like hyperactivity of portions of the musculature. Five were seen at the Illinois Neuro-psychiatric Institute and 15 were seen at the Houston VA Hospital. The group included nine patients with limb paralysis, three patients with disturbance of neck muscles that manifested itself in a torticollis type of twisting of the neck, and eight miscellaneous patients with marked widespread tics or unusual muscle spasms that interfered seriously in daily living. All the patients in the group were using malfunctioning of their musculature as their chief mode of symptom expression. Such conversion symptoms have not been customarily classified as "psychosomatic," but of course the dividing line between "conversion" and "psychosomatic" is vague and much disputed. In any case, the symptomatology of the group involved disturbance in the functioning of the musculature (which is a part of the outer body layers) as a reaction to psychological stress, and thus provided data for testing Hypothesis I as it was formulated.

Methods

In preliminary work (6) involving the body image concept, the writers experimented with a number of different methods for obtaining body image fantasies from subjects. Evaluations were

made of the richness of body image data that one could obtain from various types of interview material, TAT responses, figure drawings, and Rorschach responses. Of these various methods, the Rorschach seemed to provide the most meaningful data. Thus, the body image fantasies of the subjects in the present study were obtained by means of the conventionally administered Rorschach test. The scoring of the Rorschach responses that were collected was based on a new frame of reference concerning what a Rorschach response represents. After the fashion of Schilder (19) and Adler (1), it was assumed that in all of his perceptions the individual is to some degree influenced by his underlying concept of his own body. It was assumed that the individual's body image is a pervasive reference point that in varying degrees influences the perceived pattern, size, and other qualities of that which is outside of himself. With this viewpoint, it was postulated that the individual reveals something of his body image in every Rorschach response he gives. If, then, one were interested in measuring a given body image variable, each Rorschach percept could be scored for this variable and an over-all score for the total record could be derived.

There are two body image variables of special concern in the present study. One has to do with the degree to which the individual conceives of his body exterior as a very special defensive barrier which guards and encloses him. The other variable has to do with the degree to which the individual conceives of his body wall as being of little defensive value and easily penetrated. A scoring system was set up for evaluating each Rorschach response relative to these two variables. The details of the scoring system were derived from empirical in-

spection of the Rorschach records of a rheumatoid arthritic group (6). It was on the basis of the data obtained from this same group that the hypotheses underlying the present study were formulated. Inspection of the data from the arthritics suggested that an individual's perception of his body exterior as having marked barrier value or unusual enclosing protective properties could be reflected in his Rorschach responses in two different ways:

a. It could be reflected in terms of images that referred to containers, enclosed spaces, and boundary surfaces characterized by hardness. The following actual Rorschach responses are examples of such images: "bottle," "urn," "cave," "turtle with a hard shell," "volcano," "fort with a cement wall."

b. It could be expressed in the form of percepts that involved the covering over or concealment of one thing by another. Included also in this category are percepts that refer to unusual substances and materials which have covering functions. Some examples follow: "vine growing over and around a vase," "tree covered with moss," "insect under a leaf," "woolly sheepskin," "striped skunk skin."

An individual's feeling that his body exterior was of little protective value and could be easily penetrated was considered to be reflected in his Rorschach responses in three different ways:

a. One form of expression is literally in terms of images that involve the penetration, disruption, or wearing away of the outer surfaces of things. The following Rorschach responses are illustrations of such images: "bullet penetrating flesh," "shell of a turtle that has been broken open," "squashed bug," badly worn away animal skin."

b. A second category involves re-

sponses that emphasize modes or channels for getting into the interior of things or passing from the interior outward to the exterior. Here are some examples: "vagina," "anus," "open mouth," "an entrance," "doorway."

c. A third category embraces responses which define the surfaces of things as being easily permeable or fragile in nature. The following are examples: "soft ball of cotton candy," "fleecy, fluffy cloud," "mud that you can step through."

In scoring any given Rorschach record, the total number of responses falling into the above categories was compiled. Each response was given a value of 1, and two basic scores were computed. The first score corresponds to the summation of the two subcategories, defined above, relative to the concept of the body surface as a barrier. This score will be referred to as the "barrier score." The second score includes all three of the subcategories defined above relative to the concept of the body as being easily penetrated. It will be referred to as the "penetration of boundary" score. The scoring of the records was done jointly by the two writers. In order to check on the reliability of the scoring system, six Rorschach records were pulled out and submitted to three clinical psychologists for scoring. Then, six other records were selected and submitted to three more clinical psychologists for scoring. Each of the scorers was carefully instructed in the scoring criteria. When their scoring of the records was compared with the joint scoring of the two writers, it was found that the six raters identified correctly an average of 76 per cent of the responses originally categorized as "barrier" and 63 per cent of those originally classified as "penetration of

boundaries." One scorer correctly identified 100 per cent of the barrier responses and 92 per cent of the penetration responses. At the other extreme, one scorer identified only 53 per cent of the barrier responses and 50 per cent of the penetration responses. However, the percentage indices do not give an accurate picture of the relationship between the original and new scores, since they do not take into account responses placed in given categories by the six raters that had previously not been classified at all by the original scoring because they were considered to have neither barrier nor penetration of boundaries attributes. In order to get a more over-all index of the relationship between the original scoring and the new scoring, rank-order (*rho*) correlations were calculated between the original barrier scores for the twelve Rorschach records and twelve new scores, each of which was a mean composite of the evaluations of three new scorers. The *rho* correlation for barrier scores was + .76. The analogous *rho* correlation for penetration of boundary scores was also + .76.

These *rhos* are lower than one would like for an index of interscorer reliability. There is no doubt that the body image scoring of the Rorschach records requires some very complex and careful judgments. The possibility suggested itself that one was asking too much of scorers, who are not extremely highly motivated, to expend the careful effort required for accurate scoring of such complex material. In order to check on the reliability of scoring when the scorers were more highly motivated, each of the present writers individually scored the body image aspects of a series of 20 Rorschach records obtained from a previous research project (9) and which had

never been scored for body image before. It was assumed, of course, that the writers would be more highly motivated to do a careful job of scoring than would other persons. When the two sets of scorings were compared, the rho correlation for barrier scores was + .82 and the rho correlation for penetration of boundary scores was + .94. These values were considered to be sufficiently high for the present exploratory study.

III. RESULTS RELATING TO HYPOTHESIS I

The testing of Hypothesis I requires a comparison of the various body image scores of the interior symptom groups with those of the exterior symptom groups. If the hypothesis holds true, those scores which indicate emphasis on the barrier value of the body exterior should be significantly higher in the exterior symptom group than in the interior symptom group. Furthermore, the score which indicates a concept of the body as being easily penetrated should be significantly higher in the interior symptom group than in the exterior symptom group.

Before proceeding to test these differences, it was necessary to determine if the various groups differed significantly in the number of Rorschach responses they had produced. If such were the case, any differences among them in body image scores might be a function of total number of responses rather than of real differences in body image scores. An analysis of variance technique for groups of unequal size (24) was used to test whether the variance between groups for number of Rorschach responses was significant. An *F* of 2.37 was obtained, which falls below the 5 per cent level of significance. Thus, one may assume that any differences in body image scores among the group would not be a func-

TABLE 2
MEDIAN AND RANGE OF BARRIER SCORES AND PENETRATION OF BOUNDARY SCORES IN EACH OF THE EXPERIMENTAL GROUPS

| Groups | Barrier Scores | | Penetration of Boundary Scores | |
|---------------------|----------------|-------|--------------------------------|-------|
| | Mdn | Range | Mdn | Range |
| Arthritis | 4 | 0-8 | 1 | 0-6 |
| Neurodermatitis | 4 | 0-15 | 2 | 0-7 |
| Conversion | 5 | 1-15 | 2 | 0-7 |
| Stomach Disturbance | 1 | 0-3 | 5 | 1-9 |
| Colitis | 1 | 0-5 | 3 | 0-11 |

tion of number of Rorschach responses.

Table 2 indicates that all of the median barrier scores fall in the direction predicted by Hypothesis I. Thus, the median barrier score of each of the interior symptom groups is exceeded by the median of each of the exterior symptom groups. Furthermore, the upper range of barrier scores is higher in each of the exterior groups than in the interior groups. The penetration of boundary medians, shown in Table 2, likewise fall into a pattern congruent with Hypothesis I. The two interior symptom groups both have higher penetration of boundary medians than do any of the exterior symptom groups. In addition, the upper range of scores in the interior groups is higher than in the exterior groups.

Because the distributions of barrier and penetration of boundary scores were seriously skewed, it was decided to test for the significance of differences between groups by means of chi square. As shown in Table 3, almost all the exterior groups are differentiated in the direction of having higher barrier scores than each of the interior groups, at the .001 level. The total exterior group is differentiated from the total interior group at the .001 level. The only differences which fall below the .001 level are those in-

TABLE 3

CHI-SQUARE ANALYSIS OF THE DIFFERENCES IN BARRIER SCORES BETWEEN EACH OF THE INTERIOR SYMPTOM GROUPS AND EACH OF THE EXTERIOR SYMPTOM GROUPS, AND ALSO OF THE TOTAL INTERIOR SYMPTOM GROUP AS COMPARED TO THE TOTAL EXTERIOR SYMPTOM GROUP

| Groups | χ^2* Value | P (df = 1) | Group with Larger Score |
|---|--------------------|---------------|----------------------------|
| Arthritis vs. Stomach Disturbance | 19.1 | .001 | A |
| Dermatitis vs. Stomach Disturbance | 19.4 | .001 | D |
| Conversion vs. Stomach Disturbance | 32.0 | .001 | Conv. |
| Arthritis vs. Colitis | 6.4 | .01 | A |
| Dermatitis vs. Colitis | 5.2 | .02 | D |
| Conversion vs. Colitis | 15.7 | .001 | Conv. |
| Total Exterior Group vs. Total Interior Group | 36.5 | .001 | Ext. |

* Scores were categorized into 0-2 barrier responses and 3 or more. This cutting point was arbitrarily established by inspection of scores in the arthritis group.

volving arthritis vs. colitis and neurodermatitis vs colitis. The arthritis vs. colitis difference is at the .01 level; and the dermatitis vs. colitis difference is at the .02 level.

Table 4 indicates that, by and large, Hypothesis 1 is also confirmed in terms of penetration of boundary responses. The penetration of boundary responses of the total interior group exceeds those of the total exterior groups at the .02 level. Two of the exterior groups are differentiated from the stomach disturbance group at the .01 level or better, and a third exterior group is differentiated from the stomach disturbance group at a .05-.10 level. None of the exterior groups are significantly exceeded by the colitis group in penetration of

boundary responses. But as Table 3 indicates, the median penetration score of the colitis group is in the predicted direction of being higher than the corresponding score of each of the exterior groups.

Another test of the basic difference in body image responses between the interior symptom and exterior symptom groups was undertaken by means of a sorting procedure. The Rorschach records of five arthritic patients (exterior) and of five stomach difficulty patients (interior) were submitted without identification to three different clinical psychologists. Each sorter was told that five of the records were obtained from arthritics and five from patients with stomach difficulties, and he was in-

TABLE 4

CHI-SQUARE ANALYSIS OF THE DIFFERENCES IN PENETRATION OF BOUNDARY SCORES BETWEEN EACH OF THE EXTERIOR SYMPTOM GROUPS AND EACH OF THE INTERIOR SYMPTOM GROUPS, AND ALSO OF THE TOTAL EXTERIOR SYMPTOM GROUP AS COMPARED TO THE TOTAL INTERIOR GROUP

| Group | χ^2* Value | P (df = 1) | Group with Larger Score |
|---|--------------------|---------------|----------------------------|
| Arthritis vs. Stomach Disturbance | 11.7 | .001 | S |
| Dermatitis vs. Stomach Disturbance | 8.0 | .01 | S |
| Conversion vs. Stomach Disturbance | 3.6 | .05-.10 | S |
| Arthritis vs. Colitis | .00 | — | — |
| Dermatitis vs. Colitis | .23 | — | — |
| Conversion vs. Colitis | .00 | — | — |
| Total Exterior Group vs. Total Interior Group | 5.3 | .02 | Int. |

* Scores were categorized into 0-2 penetration of boundary responses and 3 or more. This cutting point was arbitrarily established by inspection of scores in the arthritis group.

structed to sort them into the two groups. Before undertaking the sorting, each psychologist was thoroughly instructed in the body image criteria used to distinguish the exterior group from the interior group. Two of the sorters were able to make the distinction required without error. One sorter misplaced two records. These results further confirm the fact that the distinction between interior symptom and exterior symptom records can be made with a good deal of accuracy. This also, incidentally, represents an additional demonstration, in a global manner, of the objectivity and reliability of the variables involved in scoring of "barrier" and "penetration" responses.

In general, then, the results of the over-all analysis indicate that the subjects with exterior body symptoms significantly exceeded subjects with interior body symptoms in the degree to which they conceived of their bodies as surrounded by an impermeable defensive boundary. Conversely, subjects with interior symptoms exceeded those with exterior symptoms in the degree to which they regarded their bodies as permeable.

IV. TESTING OF HYPOTHESIS II

The results described to this point indicate clearly that patients with interior body symptoms can be significantly differentiated from patients with exterior symptoms in terms of specific body image criteria. But the question arises as to the origin of this difference. Is the difference in body image concept a long-standing characteristic which perhaps is of etiological significance in determining the site of body disturbance? Or is the difference simply a reflection of the fact that when an area of an indi-

vidual's body becomes disturbed, the disturbance causes a distortion in some aspect of the body image which is correlated with the area of body disturbance? That is, if individuals with exterior body symptoms differ in body image from those with interior symptoms, may this body image difference perhaps be attributed to the impact of experiencing unusual sensations from disturbed body sites that are differentially located? Of course, Hypothesis II states that such is not the case and that the body image plays an etiological type of role in choice of psychosomatic symptom site.

It was felt that one way to test the hypothesis would be to use control subjects with symptoms that were subjectively equivalent to given psychosomatic symptoms, but which were determined by factors known to be nonpsychosomatic in character. Thus, if an individual were experiencing symptoms similar to that of a rheumatoid arthritic but it was known that these symptoms were the result of a specific mechanical injury, it would then be possible to observe whether the individual's body image was like that of the arthritic or not. If it were like that of the arthritic, despite the very different origin of the symptom, this fact would lend support to the idea that it is the subjective experiencing of the symptom itself which distorts the body image in a given fashion. But if, even in the fact of the similarity in symptoms, the individual with the mechanical injury did not have a body image similar to the arthritic, this condition would lend support to the concept of the body image as having a determining form of influence on the arthritic symptom, rather than being a reaction to the symptom.

Two groups of subjects were used to

TABLE 5
THE DIAGNOSTIC GROUPING, NUMBER, MEAN AGE, SEX, MEAN EDUCATION IN YEARS, AND MEDIAN DURATION OF SYMPTOM IN YEARS OF THE TWO SYMPTOM ORIGIN CONTROL GROUPS

| Group | N | Mean Age | Sex | Mean Education | Median Duration of Symptom |
|-------------|----|----------|---------|----------------|----------------------------|
| Back Pain | 20 | 31.7 | All Men | 10.1 | 4.5 |
| Skin Damage | 22 | 32.8 | All Men | 12.1 | .5 |

test Hypothesis II in terms of the logic just described.

One group of 20 subjects consists of patients seen at the Houston VA Hospital who had suffered injuries to the back or spine as the result of accidents and whose symptoms involved mainly pain in the muscles, difficulty in moving, and stiffness. It should be indicated that in several of the cases the specific cause of the pain and stiffness was not known, but was suspected to be due to mechanical trauma. The over-all group was chosen to duplicate so far as possible the symptomatology of the rheumatoid arthritics. A second group of 22 subjects was utilized which consisted of 16 patients with burns of the skin and six patients with dermatitis due directly to contact with specific chemical substances. This group was chosen to duplicate the symptoms of the neurodermatitis group. There was a similar blemishing and irritation of the skin, but the origin could be traced to a specific nonpsychosomatic factor. Dr. Ruth Levy had used this control group in a previous study (14). She obtained the subjects in the group from among the employees at an industrial plant.

It should be acknowledged at this point that the two control groups are partially lacking in the respect that the duration of symptoms in these groups is not equal to the given groups with which they are intended to be matched. Thus at the time the Rorschach was ad-

ministered, the median duration of symptoms in the skin damage group was six months. But the median duration in the neurodermatitis group was nine and one-half years. The disparity is marked, but could not be avoided because of the difficulty of obtaining a group of subjects with injuries to the skin due to known external agents. However, such a disparity was to a large degree avoided in the instance of the back pain group vs. the arthritic group. In the back pain group the median duration of symptoms was four and one-half years, while the median in the arthritic group was five and one-half years. This difference of one year would not appear to be of much psychological significance relative to the total period of time involved. However, one cannot be certain, and a further analysis of this problem of difference in symptom duration between the groups is described at a later point in the paper.

Before determining the differences in body image scores between each control group and the given group to which it was matched, the data were tested to ascertain if significant differences in number of Rorschach responses existed between the groups. Such differences might produce body image score differentiations which were a function of total number of Rorschach responses rather than of real body image differences. A chi-square analysis, based on a three-fold breakdown of each group into

records of 1-10 responses, 11-20 responses, and over 20 responses, indicated that the arthritic and back pain groups were not significantly different, and likewise indicated that the neurodermatitis and skin damage groups were not significantly different in this respect.

A chi-square analysis was made of the difference in barrier scores between each experimental group and its given control group. It was found that the arthritic group gives significantly higher body image barrier scores than the back pain group. The difference is significant at the .001 level. Furthermore, the neurodermatitis group gives significantly higher barrier scores than the skin damage group. Here, too, the difference is significant at the .001 level. These differences agree with the predictions of Hypothesis II. It may also be noted at this point that in order to check on how well each control group could be distinguished from the given group to which it was matched, a sorting technique was attempted. Five Rorschach records from the arthritic group and five from the back pain group were given without any identifying data to three individual clinical psychologists. The barrier characteristic of the arthritic body image was explained, and each sorter was asked to select out the five arthritic records from the total group of ten records. Two of the raters accomplished this without error and one rater made two errors. The same procedure was followed with five neurodermatitis records and five skin damage Rorschachs. These records were submitted to six clinical psychologists for evaluation. Four of the sorters were able to make the distinction required without any errors. One sorter misplaced two records, and one sorter misplaced four records.

Thus, although the two control groups

are each characterized by symptoms subjectively like those of the exterior groups, they are definitely distinguishable in terms of body image criteria from the psychosomatic group to which each is matched. Apparently, it is not the external symptom itself which gives rise to the body image with barrier boundaries. Of course, the fact that the two psychosomatic groups had experienced their symptoms for a longer period than the two control groups makes it possible to raise some doubts about the meaning of the higher barrier scores in the two psychosomatic groups. Perhaps they are simply the result of the longer duration of symptoms. In order to check on this possibility, a division was made of each of these psychosomatic groups into that half with the longest duration of symptoms and that half with the shortest symptoms duration. Where there was an odd number of cases the middle case was dropped from the analysis. Using a nonparametric technique (26) to test for significance of difference, it was found that in neither one of the two exterior groups did the subgroup with symptoms of longest duration significantly exceed the subgroup of shortest symptom duration in barrier scores. The long and short duration subgroups within the conversion were also compared, and here too the barrier score differences were not significant. Over all, these results strongly suggest that the barrier scores are not a function of duration of an exterior symptom. Thus, the difference in barrier score between the arthritics and the back pain group and between the neurodermatitis patients and the skin damage patients would seem to be a meaningful one that has strong confirmatory value for Hypothesis II.

A still further analysis of the barrier

scores of the two control groups was undertaken by comparing these scores with those of the two internal symptom groups. This analysis was carried out to determine if the barrier scores of the control groups would significantly exceed the barriers scores of the internal symptom groups. If the body image boundaries of the subjects in the control groups have been even perceptibly affected by their symptoms, which are subjectively similar to body exterior symptoms, one would assume that the barrier scores of these subjects would be significantly greater than those subjects in the interior symptom groups. However, results of a chi-square analysis indicated that the barrier scores of the control groups are not significantly greater than those of the interior symptom groups. This is additional confirmation that the mere experiencing of a symptom on the exterior of the body does not determine the barrier characteristics of the body image. Here also is a further indirect confirmation of Hypothesis II.

V. DISCUSSION OF RESULTS

The results obtained indicate that the "body image" concept is a promising frame of reference from which to view psychosomatic phenomena. It would appear that the kind of differentiation which the individual makes in his body image between his body exterior and his body interior plays a significant role in his mode of expression of psychosomatic symptomatology. The individual who conceives of his body exterior as an exaggerated defensive barrier which must be protected against penetration tends to make use of a pattern of symptoms quite different from the individual who conceives of his body exterior as weak, easily permeable, and easily pene-

trated. In the first instance, the symptom pattern quite analogously involves the exterior layers of the body, and in the second instance it involves the interior organs of the body.

As one looks back over past speculation and work dealing with psychosomatic symptomatology, one finds that the concept of inner symptoms vs. outer symptoms has definitely played a part in the thinking of others. In a general way, both Schilder (19) and Reich (17) recognized the unusual significance of the body exterior to the individual. Reich (17) was especially impressed with what he called the "body armor"; and he felt that people used rigidity of the musculature in various parts of their bodies to impose restrictions upon disturbing impulses within themselves. More recently Seitz (20, 21) and Kepcs (12) have suggested on the basis of clinical data that psychosomatic symptoms tend to fall into interior and peripheral groupings, and have particularly emphasized the value of this concept in explaining the sequence of symptoms when an individual loses one symptom and develops a new one. Thus, Seitz (21) has shown that if an individual is induced by means of hypnotic techniques to give up a symptom which involves the exterior of the body, this symptom will tend to be replaced spontaneously by still another exterior symptom. His work certainly fits in well with the idea put forward in the present study that there are basic tendencies toward exterior vs. interior symptom expression, and that the individual symptom is only a manifestation of such basic tendencies. Another publication pertinent to the present study should be cited. Lorr (16) obtained ratings from individual therapists of the symptoms and behavior of patients they had in psychotherapeutic treatment.

Upon factor analyzing the results, Lort found three factors which he felt roughly corresponded to the three embryonic germinal layers of the body and which seemed to correspond, at one level, to different groupings of psychosomatic symptoms. He linked given groupings of psychosomatic symptoms with given layers of the body. These results, too, are congruent with the interior vs. exterior body image distinction.

The question arises as to why the distinction between body interior and exterior should play a significant role in the individual's way of defending himself against psychological stress. Why is it that some individuals come to give so much positive or negative importance to the body exterior as a line of defense? Those who have speculated about this problem in the past (8, 19, 10) have had a number of explanations to offer: (a) It has been pointed out, first of all, that the body exterior is that part of the individual which literally serves as the contact point between the individual and his environment. The body exterior is the most immediately exposed to the impact of new or threatening situations. Thus, in this sense, the body exterior does actually occupy the position of a line of defense, a boundary line. (b) It has been indicated that the individual can better visualize the exterior part of his body than he can the interior of his body. He does have a detailed image of his outer aspects, whereas the interior of his body remains something hazy and ill defined. Consequently, the body exterior may be thought of as having more substance and material reality to the individual than does his body interior. This would make it easier for him to conceive of his exterior as something of substantial defensive value. (c) It is also true that the activities of the exterior layers of the body are much more subject to voluntary control than are those of the body interior. The individual can embellish, cover up, or change the appearance of his skin; he exerts controlling force over his striated musculature. But his body interior is, by and large, subject to the influence of involuntary autonomic centers. Consequently the individual is probably left with the feeling that his body exterior is something which he commands and can actively use in his own defense. This is a feeling which he lacks about his body interior.

Of course, these explanations of the psychological importance of the differentiation between body exterior and in-

terior are purely speculative. The whole matter requires further investigation.

The body image cannot be meaningfully considered as an isolated concept. Presumably it is something which grows gradually out of the individual's experiences and in various ways reflects his style of life. It may be assumed that to some degree the body image is an index of the way in which an individual thinks of his role in the world. When one evaluates the barrier characteristics of an individual's body image, is one perhaps not evaluating how far that individual feels he ought to keep himself guarded and aloof from outside dangers and also from internal dangers? Is one perhaps not evaluating how free the individual feels to communicate with those about him and to become aware of his own inner feelings? When considered from this point of view, does it not follow that the barrier dimension of body image represents an area which has long been a matter of concern in psychology? It is an area which has been the subject of much speculation and research under a variety of different names. Using different approaches and different terminologies, various researchers have been concerned with the mechanisms available to the individual for warding off and evading anxiety-provoking stimuli. One investigator deals with them in terms of "selective perception" (5); another describes them relative to the concept repression (10, 8); still another describes them as manifestations of rigidity (9); and even further they are approached in terms of concepts like authoritarianism and anti-interoceptiveness (2). It would appear to the present writers that these different lines of research interest actually have in common a concern with how the individual sets up boundaries or limits to what he can comfortably include within his world. The boundary dimension of body image spells out one aspect of this process of setting limits. It apparently defines the degree to which the individual finds it necessary to distort the functioning of his body exterior in order to reinforce the defenses about himself. One would hypothesize that of the various methods available for setting boundaries to one's world, those involving marked disturbance in exterior body functioning are among the more pathological and regressive.

It is of interest to speculate also concerning the subjects in the interior symptom group. Their body images are characterized by boundaries which are conceived as being easily penetrated. In this group the body image boundaries are fluid and vague rather than fixed and barrier-like. It is as if these individuals feel stripped of their body exterior, and experience their body interior as directly exposed to whatever impinges upon them. They experience their

bodies as being open rather than closed. One wonders whether the symptoms of the individuals in this group do not represent an earlier form of body defense than do the symptoms of those in the exterior symptom group. Is it possible that the typical individual in the interior symptom group was exposed to stresses which required defensive body reactions at a period early in life before he had mastery over, or a body image concept of, his body exterior? At such an early period the workings of the internal organs (e.g., stomach and lower intestine) might perhaps represent the most articulated aspect of a hazy and just-developing body image. Thus tension and disturbance requiring body reactions might more meaningfully be expressed through the response of internal organs than through response of the body exterior. In this way, a primary pattern might be laid down which would interfere with the development of a body image with barrier boundaries. The individual's attitudes about his body would have been somewhat fixed at a point where the concept of defensive mastery of the body exterior had not yet developed. A body concept of this sort might later prevent free experimentation with the potentialities of the body exterior as a channel of expression and defense.

It is pertinent at this point to note that there are some personality theory systems which have directly or implicitly placed much emphasis on the concept of body boundaries and communication through these boundaries. The Lewinian group (15) is an example of one that has been very explicit in its use of such concepts. The psychoanalytic theorists have also used such concepts considerably, but less explicitly. Actually, one can interpret important segments of psychoanalytical theory in terms of body boundary concepts. The whole theory that primary erogenous zones (mouth, anus, genitals) become in succession focal points of influence upon personality development can be so interpreted. One can take the view that the psychoanalytic formulations about these erogenous zones have to do with the manner in which individuals either block off or render unusually open the body apertures associated with the given erogenous zones. The individual who is "fixated orally" may be thought of as someone who fantasies that the oral opening into his body is the only real channel through his body wall. He perhaps conceives of his other body openings as closed and not available to him for communication between "in" and "out." Likewise, the individual who shows "anal fixation" may be thought of as someone who regards the anal aperture as the primary opening in his body wall and who is unusually concerned with the blocking or unblocking of this

opening as a means of obtaining things and getting rid of things. The psychoanalytic concern with body boundaries is further illustrated by such concepts as "projection," introjection, and "identification" which are frequently defined (8) in terms of the taking into the body or ejection from the body of various kinds of things and person representations. There are numerous other examples of a similar character which could be cited. Aside from these psychoanalytic concepts and some of the formulations of the Lewin group, one does not find much interest elsewhere in the problems of body image and body image boundaries.

The hypotheses of the present study have been confirmed in a general and approximate fashion. However, a definitive confirmation will probably require a longitudinal approach. The existence of an etiological relationship between body image and site of symptom could be strictly tested by obtaining body image measures on a population of young persons who had not yet developed psychosomatic symptoms. Predictions concerning future symptoms could then be made from those measures; and finally observations could be made over a period of years to record the actual patterns of symptoms that do develop. Aside from such stricter testing of the hypotheses that have been proposed, it would also be interesting to determine what relationships exist between the body image characteristics and the more generalized personality phenomena. How do body image boundaries vary during the process of growing up and maturing? How are body image boundaries related to an individual's behavior in a group? How are body image boundaries related to the kinds of values and beliefs which an individual adopts?

VI. GENERAL SUMMARY OF FINDINGS

This study was undertaken to test two hypotheses. The first hypothesis proposed that patients with psychosomatic

symptoms involving the body exterior would have a greater tendency to conceive of their bodies as surrounded by an impenetrable barrier than would patients with symptoms involving the body interior. The second hypothesis suggested that this difference in body image was not the result of the differential experiencing of symptoms of the body exterior vs. the body interior. Rather, it was proposed that the body image itself played a determining type of role in choice of interior vs. exterior body symptom sites. In order to test the first hypothesis, a comparison was made between three groups of subjects with exterior body symptoms and two groups of subjects with interior body symptoms. The comparisons were made in terms of two body image scores derived from the Rorschach test. One score, called the "barrier score," refers to the degree to which the individual conceives of his body as surrounded by a defensive barrier. The second score, called the "penetration of boundary score," refers to the degree to which the individual visualizes his body boundary as easily penetrated. Generally, most of the score differences between the interior and exterior experimental groups were significantly in the direction predicted by the hypothesis. The subjects with exterior body symptoms did give significantly higher barrier scores and lower penetration of boundary scores than did those in the interior symptom group.

The second hypothesis was tested by comparing each of two exterior symptom groups with respective control groups that had been matched to duplicate

them in certain aspects of their symptomatology. Thus an arthritic group was matched with a group that experienced muscle pain and stiffness due to mechanical injuries. A neurodermatitis group was matched with a group that had suffered skin damage due to burns or chemical irritants. It was assumed that if the body image barrier scores were a function of simply experiencing exterior symptoms, the experimental groups should not differ from the controls. However, if the body image scores represented determining influences independent of the impact of the symptomatology itself, the experimental groups should obtain barrier scores which were significantly greater than those of the control groups. The barrier scores of the experimental groups significantly exceeded those of their respective control groups, and so the second hypothesis was confirmed.

Further confirmation of this second hypothesis was found in the fact that the barrier scores of subjects with exterior symptoms of long duration did not significantly exceed the scores of subjects with symptoms of shorter duration. If simply experiencing symptoms were the determinant of body image characteristics, one would have expected those with exterior symptoms of long duration to have obtained higher barrier scores than those with symptoms of shorter duration.

The general pattern of the results suggests that body image characteristics play a significant role in the choice of interior vs. exterior psychosomatic symptoms.

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